Sustainable Resource Management in Action: Mining

September, 2003

Mining is defined here as the activities used to find and extract minerals, coal, rocks and aggregate from the earth including the exploration, development, operation, closure, and reclamation of the mine site. Sustainable mining, to borrow a definition from the Bruntland Commission's *Our Common Future*, is mining "that meets the needs of the present without compromising the ability of future generations to meet their needs."

Sustainability encourages society to take a long-term, multi-generational view. The long-term view and the fact that society's needs change make it very challenging to predict demands. If you were to look back at the mining industry 100 years ago, the concern might have been for coal supplies to meet industrial and heating demands. Who could have predicted that this demand would be replaced by a demand for oil or natural gas?

At any one mining site, resource extraction activities have a finite lifespan related to the finite size of the deposit. On completion of mining the revegetation and management of waste materials on the site may continue for decades. The sustainability challenge is to ensure that economically viable mining activities have a net positive impact on society and ecosystems over the long term.

The supplies of all sub-surface resources are in the strictest sense finite, but the useful life of many of the mined products can be almost infinite. The re-use and recycling of mining products by current and future generations has considerably altered conventional notions of working with "non-renewable" resources.

The products of the mining industry play a critical role in our society. An average person for example, is dependent on mining products in many ways every day, whether at home, at work or at play. Metal recycling, conservation, inter-material substitution, and technological innovation may improve the efficient use of the resources, but that alone cannot satisfy society's future need for these commodities. New mineral deposits need to be found and developed to make up the difference.

Moving Towards Sustainable Resource Management

The mining industry is expanding its focus to include greater emphasis on society, communities, and the environment. The following are some steps that the sector is pursuing to ensure projects are sustainable.

Engaging local communities and First Nations

Mining projects often take place in remote or rural areas and can have a considerable impact on adjacent communities. Resource companies recognize the importance of input from communities, as part of the decision-making process. Efforts are also being made to engage local businesses in the service and supply of mines to increase local benefits. Efforts are made to ensure the skills and opportunities developed are transferable for use in other areas, once the mine ultimately closes down.

Reducing the ecological footprint

The "ecological footprint" is a way of describing the total environmental impact of a mine, both in terms of the space it takes up, the resources it uses, and the waste it generates. As mine operators implement best practices and consider more environmental and social impacts, the mine becomes more sustainable and reduces its ecological footprint. Decisions about materials handling and other aspects of mine operations are difficult and expensive to reverse, so they need to be carefully planned from the beginning. This planning is assured for B.C. mines through the Environmental Assessment and Mines Act certification and permitting processes.

Energy use is a significant factor for the mining sector which accounts for about 13 per cent of Canada's energy demand. Ongoing energy efficiency and conservation measures are used to minimize consumption and related costs, and the ecological footprint of mining activities.

Expand environmental management systems

Environmental assessments are perhaps the most widely used environmental management tool in the minerals sector and elsewhere. Assessments are mandatory for most large-scale development projects, and in B.C. those assessments are conducted through the Environmental Assessment Act and the Mines Act certification and permitting processes. Social and economic factors are a key component of these review processes.

Other environmental management systems integrate environmental responsibilities into everyday management practices through changes to organizational structure, responsibilities, procedures, processes, and resources. Large mining companies in B.C. have adopted such systems to provide a structured method for management and regulators to monitor and control the performance of a project.

Include all aspects of mine closure in the operating plan

Since 1969, B.C. mines have been required to submit a closure plan at the outset of operations. Mine closure planning focuses primarily on the environmental aspects of closure. Reclamation of mine sites often requires the need for comprehensive and long-term remediation plans for land that has been disturbed by mining operations.

In recent years, more emphasis has been placed on integrating social and economic aspects into the closure plan. Mining companies have been planning for: relocation and retraining of workers, economic diversification of mining-dependent communities, and future provision of health and social services that may have been supplied by the company. In effect, the mining sector becomes part of a process of transforming "natural capital" into "social capital".

Mining is characterized by high financial risks, sophisticated technologies, a skilled workforce, long investment periods, and high costs. At the same time, the discovery, development, operation and closure of mining operations in British Columbia has the potential to create significant wealth that can be distributed in taxes, profits, wages, and economic and employment opportunities. The B.C. Government is developing policies to create a stable, predictable investment climate for the mineral industry in British Columbia. There is also an interest in balancing the economic viability of the mines with policies that do not adversely impact the environment and support the socially responsible development of sub-surface resources.

105-07310/

Sustainable Resource Management in Action is a series of topic papers developed to provide a better understanding of the province's approach to sustainable resource management. For more information and titles of other papers in the series, visit: www.gov.bc.ca/srm